II. REMARKS

Claims 1-30 are pending. Claims 25-30 have been withdrawn pursuant to a restriction requirement. Claims 1-24 and stand variously rejected under 35 U.S.C. §§ 112, 102 and 103.

By amendment herein, claims 1 and 21 have been amended. In particular, claim 1 has been amended to specify that the fibrin component is a liquid, as described throughout the specification, for example on page 1, lines 3 to 6 and page 6, lines 1 to 8. Claim 21 has been amended to depend from claim 20 rather than claim 19. These claims have been amended solely to advance prosecution and these amendments should not be construed as an acknowledgment that the Examiner's position is correct.

New claims 31-36 have been added. Support for the new claims can be found, for example, on page 6, lines 22-24 (describing particulate liquid embolic materials) and on page 3, lines 9-13 (incorporating by reference co-owned WO/0027445 for its teachings regarding biodegradability). No new matter has been added as a result of these amendments and entry thereof is respectfully requested. Applicant reserves the right to file a continuation or divisional application directed to the subject matter of the original claims during the pendency of this application.

In view of the foregoing amendments and following remarks, Applicant requests reconsideration of the application and withdrawal of the rejections.

Restriction Requirement

The Examiner has required election as between:

Group I (claims 1-24), drawn to vaso-occlusive compositions (class 606, subclass 151); and

Group II (claims 25-30), drawn to methods of occluding an aneurysm (class 128, subclass 989).

Applicant herein confirms election of Group I, claims 1-24, with traverse.

It is axiomatic that two criteria must be met for a proper restriction requirement under M.P.E.P. § 803: (1) the inventions must be independent or distinct as claimed; and (2) there must be a serious burden on the Examiner if restriction is not required.

Applicant respectfully traverses this restriction on the grounds that it would not be a serious burden on the Examiner to search and examine the inventions of these Groups together. Indeed, a search of the art for compositions relevant to Group I would necessarily reveal art relevant to the methods of Group II. Accordingly, Applicant requests that the claims should be examined together.

In the event that the restriction requirement is made final, Applicant expressly reserves her right under 35 USC §121 to file one or more divisional applications directed to the nonelected subject matter during the pendency of this application.

Abstract

The Examiner has objected to the Abstract as too general and as allegedly not containing enough information. (See, Office Action, page 3). Applicant notes that the Rules require the Abstract to be under 150 words and, moreover, "should not refer to the purported merits or speculative applications of the invention and should not compare the invention with the prior art." See, 37 C.F.R. § 1.72; M.P.E.P. § 608.01(b). In addition, extensive mechanical and design details of apparatus should not be given. M.P.E.P. § 608.01(b). In view of these Rules, Applicant submits that the original Abstract was neither too general nor uninformative. Nonetheless, solely to expedite prosecution, a revised Abstract, setting further details, is submitted on a separate page herewith.

Trademarks

The Examiner notes that the trademarked word "Dacron" was not capitalized or denoted as a trademark where it appears in the original application. By amendment herein, the proper capitalization and trademark denotations have been added. Accordingly, this objection has been obviated.

Rejections Under 35 U.S.C. § 102

Examined claims 1 through 8 and 11 through 24 and stand variously rejected as allegedly anticipated by a variety of references.

Before addressing each reference in turn, Applicant reminds the Examiner that, in order to be an anticipatory reference, the single reference cited by the Office must disclose each and every element of the claims. *Hybritech v. Monoclonal Antibodies,* 231 USPQ 81 (Fed. Cir. 1986). Moreover, the single source must disclose all of the claimed elements arranged as in the claims. *See, e.g., Richardson v. Suzuki Motor Co.,* 9 USPQ2d 1913 (Fed. Cir. 1989). Simply put, the law requires identity as between the prior art disclosure and the invention. *See, e.g., Kalman v. Kimberly-Clark Corp.* 218 USPQ 781 (Fed. Cir. 1983), *cert. denied,* 484 US 1007 (1988). With this legal framework in mind, Applicant addresses each cited reference in turn.

Rejections Based on Eder

Claims 1-4, 11-14, 18-21 and 24 are rejected under § 102(b) as allegedly obvious over U.S. Patent No. 5,980,550 (hereinafter "Eder"). Eder is cited for disclosing a vaso-occlusive coil, a thrombus-stabilizing molecule and a bioactive material in the form of cytokine VEGF. (Office Action, paragraph 8). In addition, Eder is cited for disclosing embodiments in which one or both of the thrombus-stabilizing molecule and bioactive material are permanently bonded to the coil. (Office Action, paragraph 8).

Applicant traverses the rejection and supporting remarks.

Although Eder represents an important step in the treatment of aneurysms, this reference fails to anticipate any of the currently pending claims. In particular, Eder describes and demonstrates vaso-occlusive devices that necessarily include three components: a vaso-occlusive device, an inner coating and a water-soluble outer coating. It is axiomatic that claims including fewer elements than contained in the reference are not anticipated by that reference. *See, e.g., Kalman v. Kimberly-Clark Corp.* 218 USPQ 781 (Fed. Cir. 1983), *cert. denied,* 484 US 1007 (1988). Here, the present invention does not include a no water-soluble outer coating on the vaso-occlusive device and, accordingly, Eder does not anticipate pending claims 1-4, 11-14, 18-21 and 24.

Furthermore, Applicant notes that the outer coating disclosed in Eder is necessary, for example to reduce "thrombus formation on the coil during delivery." (See, Eder col. 6, lines 16 to 22). Indeed, using an inner (bioactive) coating alone "may induce

complications during coil packing and coil manipulation." (See, Eder, col. 3, lines 5-6). Thus, the requirement that the coils include a dissolvable outer coating makes Eder's devices entirely different from Applicant's, which do not include an outer coating of any sort. Because Eder does not disclose all of the elements as arranged in the pending claims, this reference does not anticipate the pending claims and Applicant submits that withdrawal of this rejection is in order.

Rejections Based on Callister

Claims 1, 5, 6, 16 and 19 are alleged to be anticipated under 102(a) by U.S. Patent No. 6,096,052 (hereinafter "Callister"). In support of these rejection, Callister is alleged to disclose a vaso-occlusive member and an additional material of copper. (See, Office Action, paragraph 9).

The pending claims are directed to vaso-occlusive members along with an additional specified material. As indicated throughout Applicant's specification, vaso-occlusive members are devices suitable for use in the vasculature. (See, *e.g.*, Background). In contrast, Callister's devices are not used to occlude the vasculature, but, rather, as contraceptive devices for use in the reproductive tract. (See, Callister, Abstract). Therefore, this reference does not anticipate pending claims 1, 5, 6, 16 and 19 and withdrawal of this rejection is in order.

Rejections Based on Ji

Claims 1 and 16 stand rejected as allegedly anticipated by U.S. Patent No. 5,894,022 (hereinafter "Ji"). Ji is cited for disclosing "a matrix base (column 2, lines 38-42) that cross-links fibrin (col. 11, lines 65-67) to form a microscopic mesh (column 2, lines 53-56). (See, Office Action, paragraph 10).

Pending claims 1 and 16 are directed to vaso-occlusive compositions comprising, in certain embodiments, liquid fibrin. Liquid fibrin is distinct from cross-linked fibrin mesh of Ji. Indeed, the reference teaches that the fibrin mesh is "an essentially sponge-like structure having a semisolid/semi-liquid or spongy texture." (See, Ji, col. 2, lines 41-42). This is unlike Applicant's invention which claims and discloses use of liquid fibrin.

Accordingly, claims 1 and 16 are not anticipated by Ji and withdrawal of this rejection is respectfully requested.

Rejections Based on Schwartz '507

Claims 1, 7, 8, 11, 17, 19 and 23 stand rejected as allegedly anticipated by U.S. Patent No. 5,800,507 (hereinafter "Schwartz '507"). In support of this rejection, the Examiner states:

> Schwartz [Schwartz '507] discloses the claimed vaso-occlusive composition. Referring to claims 1, 7 and 8, Schwartz discloses a composition that includes a vaso-occlusive member (column 4, lines 64-67) and thrombus-stabilizing molecule Factor XIII (column 3 lines 43-44). Referring to claims 11 and 17, Schwartz discloses a composition that the material fibrin is adsorbed to the vaso-occlusive member (column 3, lines 60-64) and the vaso-occlusive member has a tie layer between the stent and the material fibrin (column 3 line 60 - column 4 line 4). (Office Action, paragraph 11).

All of the pending claims are directed to vaso-occlusive compositions. In other words, these devices function to occlude a selected vessel, such that blood cannot flow through these sites. (See, *e.g.*, Background Section of the application). In stark contrast, Schwartz '507 is directed to stents – devices which function to prevent occlusion (restenosis). (See, *e.g.*, Schwartz '507, Abstract). Simply put, there is no description, teaching or suggestion in this reference of vaso-occlusive compositions as specifically recited in claims 1, 7, 8, 11, 17, 19 and 23. Accordingly, withdrawal of this rejection is in order.

Rejections Based on Murayama

Claims 1 and 15 stand rejected as allegedly anticipated by U.S. Patent No. 5,891,192 (hereinafter "Murayama"). Murayama is alleged to disclose "a vaso-occlusive coil subjected to ion implantation (column 3 lines 21-22) and an additional material of fibrin (column 2 line 64 - column 3 line 8 and column 6 lines 2-4)." (See, Office Action, paragraph 12).

As noted above, the pending claims are directed to vaso-occlusive compositions comprising liquid fibrin. Murayama discloses only the use of fibronectin and/or fibrinogen with vaso-occlusive coils. (See, column 3, line 4). Exhibit A, attached hereto for the Examiner's convenience, includes the common definitions of fibrin, fibrinogen and fibronectin, and shows a clear distinction between these substances. (See, relevant pages from the "Dictionary of MicroBiology and Molecular Biology" attached hereto as Exhibit A). Fibrin, fibrinogen and fibronectin are different substances and fibrin, as claimed by Applicant, is not described in Murayama. Briefly states, fibrinogen is a precursor of fibrin that is converted to fibrin only in the presence of thrombin. Thus, whereas Murayama apparently relies on the presence of thrombin in the plasma to convert fibrinogen to fibrin after delivery to the vasculature, Applicant's compositions include fibrin *per se* prior to delivery. For its part, fibronectin is a distinct molecule from either fibrin or fibrinogen. (See, Exhibit A). Since Murayama fails to describe or demonstrate the use of fibrin in combination with vaso-occlusive members, this reference does not anticipate pending claims 1 and 15 and Applicant respectfully requests withdrawal of this rejection.

Rejection Under 35 U.S.C. § 103

The Examiner has also rejected claims 9 and 10 as allegedly obvious over U.S. Patent No. 6,080,190 (hereinafter "Schwartz '190"). In support of this rejection the Examiner states, in part:

> it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace Factor XIII (column 3 lines 47-48) with PAI-1 or alpha2-antiplasmin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. (Office Action, paragraph 14).

Applicant traverses the rejection and supporting remarks.

In order to render claims obvious, the burden is on the Office to establish that the combination of cited references teaches all the limitations of the claimed invention and, moreover, the references suggest the desirability of arriving at the claimed subject matter.

(*See, e.g., Amgen, Inc. v. Chugai Pharm. Co.,* 18 USPQ2d 1016, 1023 (Fed. Cir. 1991) stating that "hindsight is not a justifiable basis on which to find that the ultimate achievement of along sought and difficult scientific goal was obvious" and *In re Laskowski,* 10 USPQ2d 1397, 1399 (Fed. Cir. 1989) stating that "the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.")

In the pending case, Schwartz '190 fails to teach or suggest critical limitations of the pending claims and, in addition, fails to suggest the desirability of modifying its disclosure to arrive at the precisely claimed invention.

For the reasons detailed above with regard to Schwartz '507, Applicant submits that Schwartz '190 also fails to describe and demonstrate production and use of vaso-occlusive compositions. Schwartz '190 is expressly limited to stents, which are designed to keep vessels open. Conversely, the claimed vaso-occlusive compositions necessarily occlude a vessel in which they are placed. It is entirely improper for the Office to turn Schwartz '190 on its head and simply declare that it would have been obvious to arrive at the vaso-occlusive composition of claims 9 and 10 by substituting each and every component of the Schwartz '190 device with different components that serve a different purpose. In short, the skilled artisan would not (and indeed could not) have been motivated from Schwartz '190 to arrive at the invention of claims 9 and 10.

The obviousness rejection is also improper because the modifications suggested by the Examiner would destroy the intended function of the primary reference. The law governing obviousness rejections is well-settled -- if the Office's efforts to attain the claimed invention cause the reference to become inoperable or destroy its intended function, then the requisite motivation to make the modification would not have existed. *See, e.g., In re Fritch,* 23 USPQ2d 1780, 1783 n.12 (Fed. Cir. 1992); *In re Gordon* 221 USPQ 1125, 1127 (Fed. Cir. 1984).

In the pending case, Applicant submits that, in addition to the fact that Schwartz '190 does not provide the requisite motivation to arrive at the claimed invention, the suggested modification of this reference would destroy the intended function of the stents disclosed and claimed in this patent. Schwartz '190 clearly teaches (and claims) only

stents -- devices designed to prevent occlusion and restenosis. (*See, e.g.,* Abstract and claims). Replacing both the stents (with vaso-occlusive devices) and Factor XIII (with PAI-1 or alpha2-antiplasmin) would result in a completely different composition having a completely different function than contemplated by Schwartz '190. Indeed, such a modification would destroy the intended function of Schwartz, namely preventing restenosis.

In sum, there is no motivation within Schwartz '190 to arrive at the invention of claims 9 and 10. In fact, such a modification would not result in the precisely claimed invention. Accordingly, Applicant requests that this rejection be withdrawn.

III. CONCLUSION

In view of the foregoing remarks, Applicant believes the claims are in condition for allowance and requests early notification to that effect. If the Examiner believes there are any outstanding issues, she is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

Date: June 24, 2002

By: _____
Dahna S. Pasternak
Registration No. 41,411

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Marked-Up Version of the Specification

In the specification:

The paragraph beginning at line 26 on page 9 has been amended as follows:

--The devices are those materials which are generally approved for use as implants in the body or could be so approved. They may be of polymers such as polyethylene, polyacrylics, polypropylene, polyvinylchloride, polyamides such as Nylon, polyurethanes, polyvinylpyrrolidone, polyvinyl alcohols, polyvinylacetate, cellulose acetate, polystyrene, polytetrafluoroethylene, polyesters such as polyethylene terephthalate (~~Dacron~~ DACRON™), silk, cotton, and the like. When the polymers are fibrous, they are often looped or tufted. Although it is not critical to this invention, they are usually assembled in bundles of 5 to 100 fibers per bundle. Preferred materials for the polymer component of vaso-occlusive devices comprise polyesters, polyethers, polyamides, and polyfluorocarbons. Especially preferred is polyethyleneterephthalate, sold as ~~Dacron~~ DACRON™.--

Version Showing Changes Made to Claims

1. (Amended) A vaso-occlusive composition comprising a vaso-occlusive member and a material selected from the group consisting of liquid fibrin; polyethylene glycol derivatives; thrombin-coated gelatin granules; balloons coated with iron microspheres, trace metals, thrombus-stabilizing molecules and combinations thereof.

21. (Amended) The method of claim [19] 20, wherein the cytokine is selected from the group consisting of PDGF, βFGF, VEGF and TGF-beta.

31. (New) A vaso-occlusive composition comprising a vaso-occlusive member and a particulate liquid embolic material.

32. (New) The vaso-occlusive composition of claim 31, wherein the particular liquid embolic material is selected from the group consisting of microspheres, granules and beads.

33. (New) The vaso-occlusive composition of claim 31, further comprising a bioactive material selected from the group consisting of

(i) at least one cytokine;
(ii) extracellular matrix material;
(iii) DNA;
(iv) RNA;
(iv) combinations of (i), (ii) and (iii); and
(v) functional fragments (i), (ii) (iii) and (iv).

34. (New) The vaso-occlusive composition of claim 31, wherein the vaso-occlusive member is biodegradable.

35. (New) The vaso-occlusive composition of claim 31, wherein the particulate material is biodegradable.

36. (New) A method of occluding a vessel comprising administering to a subject in need thereof a vaso-occlusive composition according to claim 31.

Currently Pending Claims

1. (Amended) A vaso-occlusive composition comprising a vaso-occlusive member and a material selected from the group consisting of liquid fibrin; polyethylene glycol derivatives; thrombin-coated gelatin granules; balloons coated with iron microspheres, trace metals, thrombus-stabilizing molecules and combinations thereof.

2. The composition of claim 1, further comprising a bioactive material selected from the group consisting of

(i) at least one cytokine;
(ii) extracellular matrix material;
(iii) DNA;
(iv) RNA;
(iv) combinations of (i), (ii) and (iii); and
(v) functional fragments (i), (ii) (iii) and (iv).

3. The composition of claim 2, wherein the bioactive material is at least one cytokine.

4. The composition of claim 3, wherein the cytokine is selected from the group consisting of PDGF, βFGF, VEGF and TGF-beta.

5. The composition of claim 1, wherein the material comprises a trace metal.

6. The composition of claim 5, wherein the trace metal comprises copper.

7. The composition of claim 1, wherein the material comprises a thrombus-stabilizing molecule.

8. The composition of claim 7, wherein the thrombus-stabilizing molecule is Factor XIII or functional fragments thereof.

9. The composition of claim 7, wherein the thrombus-stabilizing molecule is plasminogen activator inhibitor-1 (PAI-1) or functional fragments thereof.

10. The composition of claim 7, wherein the thrombus-stabilizing molecule is α_2-antiplasmin or functional fragments thereof.

11. The composition of claim 1, wherein the material is adsorbed to the vaso-occlusive member.

12. The composition of claim 2, wherein the bioactive material is adsorbed to the vaso-occlusive member.

13. The composition of claim 2, wherein the material and the bioactive material are adsorbed to the vaso-occlusive member

14. The composition of claim 1, wherein the vaso-occlusive member is plasma treated.

15. The composition of claim 1, wherein the vaso-occlusive member is subjected to ion implantation.

16. The composition of claim 1, wherein the vaso-occlusive member is microtextured.

17. The composition of claim 11, wherein the vaso-occlusive member further comprises a tie-layer between the vaso-occlusive member and the material.

18. The composition of claim 1, wherein the vaso-occlusive member is selected from the group consisting of one or more vaso-occlusive coils, one or more filters, one or more retention devices and combinations thereof.

19. A method of occluding a vessel comprising administering to a subject in need thereof a vaso-occlusive composition according to claim 1.

20. The method of claim 19, further comprising administering a bioactive material selected from the group consisting of
(i) cytokines;
(ii) extracellular matrix molecules;
(iii) DNA;
(iv) RNA;
(v) combinations of (i), (ii), (iii) and (iv);
(vi) and functional fragments of (i), (ii), (iii), (iv) and (v).

21. (Amended) The method of claim 20, wherein the cytokine is selected from the group consisting of PDGF, βFGF, VEGF and TGF-beta.

22. The method of claim 19, wherein the trace metal is copper.

23. The method of claim 19, wherein the thrombus-stabilizing molecule is selected from the group consisting of Factor XIII, α_2-antiplasmin, plasminogen activator inhibitor-1 (PAI-1), combinations thereof and functional fragments thereof.

24. The method of claim 19, wherein the vessel is an aneurysm.

25 to 30. Withdrawn.

31. (New) A vaso-occlusive composition a vaso-occlusive member and a particulate liquid embolic material.

32. (New) The vaso-occlusive composition of claim 31, wherein the particular liquid embolic material is selected from the group consisting of microspheres, granules and beads.

33. (New) The vaso-occlusive composition of claim 31, further comprising a bioactive material selected from the group consisting of

(i) at least one cytokine;
(ii) extracellular matrix material;
(iii) DNA;
(iv) RNA;
(iv) combinations of (i), (ii) and (iii); and
(v) functional fragments (i), (ii) (iii) and (iv).

34. (New) The vaso-occlusive composition of claim 31, wherein the vaso-occlusive member is biodegradable.

35. (New) The vaso-occlusive composition of claim 31, wherein the particulate material is biodegradable.

36. (New) A method of occluding a vessel comprising administering to a subject in need thereof a vaso-occlusive composition according to claim 31.--

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Diana Sainsbury

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quate heat transfer from the culture. (The produced from a given substrate can be mated from the value of 110 kcal/mole O_2 en up — a value obtained empirically using ious substrates and organisms [Book ref. p. 32].) (ii) Efficient mixing of the culture.) Efficient oxygen-to-liquid transfer. (iv) aptability to a range of operating con- ions. (v) Ease of scale-up from the labora- y or pilot stage to industrial use. These tors largely determine the economics of a rmentation and the type of fermenter quired for a particular purpose; thus, e.g., n STR — but not a bubble column or airlift rmenter — would generally be considered uitable for the fermentation of a (viscous) ycelial culture since only the STR (which has a greater input energy) would be able to ensure adequate mixing.

ernández-Morán particles The stalked particles (the F_1 parts of (F_0F_1)-type PROTON ATPASES) on the inner surface of the mitochondrial inner membrane.

Fernandez reaction See LEPROMIN TEST.

ferredoxins A category of simple IRON–SULPHUR PROTEINS which are involved only in electron transfer processes; a given ferredoxin may contain one or more iron–sulphur centres of the type [2Fe–2S], [3Fe–3S] and/or [4Fe–4S]. Ferredoxins typically have low-potential (i.e., highly negative) E_m values; thus, e.g. a [4Fe–4S] ferredoxin (Fd I) in *Desulfovibrio gigas* has an E_m of −455 mV, and a (2[4Fe–4S]) ferredoxin in *Clostridium pasteurianum* has an E_m of −400 mV. However, a [2Fe–2S] ferredoxin in *Pseudomonas putida* (putidaredoxin) has an E_m of −240 mV. (See also HIPIP; cf. FLAVODOXINS.)

ferrichrome See SIDEROPHORES.

ferrimycins See SIDEROMYCINS.

ferrioxamines See SIDEROPHORES.

ferritin An iron-storage protein which occurs e.g. within various mammalian, plant and fungal cells; iron is stored within the large, hollow ferritin molecule. (cf. SIDEROPHILINS; see also IMMUNOELECTRON MICROSCOPY.)

ferrocene monocarboxylic acid See BIOFUEL CELL.

ferrochelatase See HAEM.

ferruginous Rust-coloured.

fertility factor *Syn.* F PLASMID.

fertility inhibition (of the F plasmid) Inhibition of expression of the *traJ* gene (and, hence, inhibition of the TRANSFER OPERON) by the intracellular presence of an IncF plasmid which encodes a functional *finO* product (see FINOP SYSTEM); a plasmid which encodes such a *finO* product is designated fi^+ (fertility inhibition positive) or fin^+. Compatible plasmids which do not encode a functional *finO* product are designated fi^-.

ferulate 3-Methoxy-4-hydroxycinnamate.

fes An ONCOGENE present in the Snyder–Theilen and Gardner–Arnstein strains of feline sarcoma virus (see FELINE LEUKAEMIA VIRUS); v-*fes* is closely related to v-*fps* (present in Fujinami AVIAN SARCOMA VIRUS) and may be derived from a related c-*onc* sequence. The products of v-*fes* and v-*fps* have tyrosine-specific protein kinase activity.

Fe–S protein (Fe/S protein) See IRON–SULPHUR PROTEINS.

fescue foot (fescue toxicity syndrome) A condition which affects animals (mainly cattle) grazing pastures dominated by tall fescue grass (*Festuca arundinacea*); symptoms: lameness, followed by dry gangrene of the extremities (tail tip, hooves, ears). It appears to be caused by a vasoconstrictive mycotoxin produced by fungi parasitic or pathogenic in the grasses; fungi which have been implicated include *Aspergillus terreus* and biotypes of *Epichloë typhina* [AEM (1977) *34* 576–581].

***Festuca* necrosis virus** See CLOSTEROVIRUSES.

Feulgen reaction A specific staining reaction for DNA in situ. Mild acid hydrolysis of DNA (e.g. with 1 N HCl) removes purine bases and makes available the aldehyde group of the deoxyribose; aldehyde groups react with SCHIFF'S REAGENT to give a purple coloration.

fever blister *Syn.* COLD SORE.

Ff phages F-specific filamentous phages (e.g. fd, f1, M13, ZJ/2): see INOVIRUS.

ff. sp. See FORMA SPECIALIS.

FH_4 Tetrahydrofolic acid.

FhuA protein *Syn.* TONA PROTEIN.

fi^- plasmid See FERTILITY INHIBITION.

fi^+ plasmid See FERTILITY INHIBITION.

FIAC (2′-deoxy-2′-fluoro-5-iodo-1-β-D-arabinosylcytosine) An ARABINOSYL NUCLEOSIDE which has antiviral activity against herpes simplex viruses 1 and 2, varicella-zoster virus and cytomegaloviruses in cell cultures; its mode of action resembles that of ACYCLOVIR. In trials, FIAC gave better control of progressive herpes zoster than did vidarabine; it can be administered orally.

fibrillae See FIMBRIAE.

fibrin A fibrous, insoluble protein present e.g. in blood clots; during normal blood-clotting, fibrin is formed from the plasma protein FIBRINOGEN by the action of thrombin in the presence of Ca^{2+}. (See also COAGULASE.)

fibrinogen The soluble glycoprotein precursor of FIBRIN. It consists of two identical monomers — each comprising three chains designated α, β and γ; the chains and monomers are held together by disulphide bridges. [Review of fibrin and fibrinogen: ARB (1984) *53* 195–229.]

fibrinolysin (plasmin) An enzyme which, in mammals, is responsible for dissolving blood

clots by the proteolytic degradation of fibrin. Fibrinolysin is formed from an inactive precursor (profibrinolysin, plasminogen) normally present in the blood. The term fibrinolysin has also been applied to various microbial enzymes capable of direct or indirect FIBRINOLYSIS.

fibrinolysis The degradation of FIBRIN, and hence e.g. the lysis of blood clots. Various microbial enzymes have fibrinolytic activity which may be direct — due to proteolytic activity on fibrin itself (see e.g. BRINASE), or indirect — due to the activation of PROFIBRINOLYSIN (see e.g. STREPTOKINASE).

fibrinolytic Capable of FIBRINOLYSIS.

fibrocyst (compound trichocyst) (*protozool.*) A type of TRICHOCYST formed by certain hypostome ciliates; the filament carries an umbrella-like tip.

fibroma A benign tumour of connective tissue. (cf. SARCOMA.)

fibronectin A dimeric protein (MWt ca. 440,000) produced e.g. by mast cells, fibroblasts and macrophages; macrophage fibronectin is chemotactic for fibroblasts and may therefore play a role in the initiation of tissue repair.

fibrosarcoma A SARCOMA arising from collagen-producing fibroblasts.

Ficoll A synthetic, water-soluble, non-ionic co-polymer of sucrose and epichlorhydrin, used e.g. in the preparation of density gradients for CENTRIFUGATION. It is also used for increasing the viscosity of a medium in order to slow down rapidly-motile organisms — a technique useful in certain COUNTING METHODS and in studies of ciliar and flagellar motility; in this context Ficoll has been reported to be superior to e.g. methylcellulose in that Ficoll causes less perturbation of hydrodynamic characteristics [Nature (1979) *278* 349–351].

FID Free induction decay: see NUCLEAR MAGNETIC RESONANCE.

fide In a literature citation: an indication that a given reference has not been read by the author citing that reference.

field blewit See BLEWIT.

field diaphragm (in MICROSCOPY) (1) See KÖHLER ILLUMINATION. (2) (*Syn.* field stop) A metal annulus attached to the inside of an eyepiece at the focal plane of the eyepiece lens.

field mushroom See AGARICUS.

Field's stain A water-based staining procedure for detecting e.g. *Plasmodium* spp and trypanosomes in thick blood smears. The smear is immersed in a solution of azure, rinsed, immersed in a solution of eosin, rinsed, and allowed to dry in air; the water used for staining and rinsing should have a pH of 7.0–7.2. Any parasites present will not be obscured by erythrocyte
are lysed during the proc
because a methanol fixatio
fièvre boutonneuse *Syn.* BOU
fifth disease *Syn.* ERYTHEMA
figwort mosaic virus See CA
Fiji disease A SUGARCANE D
a FIJIVIRUS and transmitted
(*Perkinsiella* spp), which is
stunting and the formation
underside of leaves. *Pseud*
sugarcane include one simila
ABY EAR DISEASE.
Fijivirus (plant reovirus subgro
of plant viruses of the REOVIR
have a two-layered capsid w
symmetry and spikes on both
layers; the outer layer is rea
ome: 10 dsRNA molecules.
plants of the Gramineae, and
important diseases of crop pla
typically include stunting, exc
enations, and unnaturally dark
Transmission occurs propagati
hoppers (*Perkinsiella* spp) in wh
ial transmission may occur. T
Fiji disease virus. Three sero
viruses are recognized (host and
range in parentheses):
Group I: cereal tillering d
(CTDV) (barley, oats, ma
Sweden); maize rough dwarf vi
(maize, oats, wheat and oth
Europe); pangola stunt virus (PS
grass' — *Digitaria decumbens* —
Digitaria spp; S. America, Taiwa
black-streaked dwarf virus (RBS
oats, maize, wheat; Japan, China).
Group II: Fiji disease virus (FD
cane — *Saccharum officinarum*;
Fiji, etc).
Group III: *Arrhenatherum* blue d
(ABDV) (*Arrhenatherum elatius*
Lolium enation virus (LEV) (ry
Lolium spp; W. Germany); oat ste
virus (OSDV) (oats, *Lolium* spp;
atherum elatius etc; Europe).
MRDV, CTDV, RBSDV and PSV
strains of the same virus or closely
viruses, as may OSDV, ABDV an
(cf. RICE RAGGED STUNT VIRUS; LEAFH
VIRUS.)
[Review: Book ref. 83, pp. 505–563.]
filament (1) (*bacteriol.*) An elongated b
cell, i.e., one in which the length exce
width by ca. 10 times or more. (2) (*bot.*
A (sheathed or unsheathed) chain of ce
Syn. TRICHOME.
filament pyrolyser See PYROLYSIS.
filamentous phages *Syn.* INOVIRUS.
filamin See ACTIN.

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ABSTRACT

BIOACTIVE MATERIALS FOR ANEURYSM REPAIR

Vaso-occlusive compositions including a vaso-occlusive member and one or more of fibrin; polyethylene glycol derivatives; thrombin-coated gelatin granules; balloons coated with iron microspheres, trace metals and/or thrombus-stabilizing molecules are described. Also described are methods of using these compositions.